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Indian Standard

METHOD FOR DETERMINATION OF COLOUR FASTNESS OF TEXTILE MATERIALS TO HYPOCHLORITE BLEACHING

(*First Revision*)

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Indian Standard

METHOD FOR DETERMINATION OF COLOUR FASTNESS OF TEXTILE MATERIALS TO HYPOCHLORITE BLEACHING

(*First Revision*)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards on 20 May 1988, after the draft finalized by the Chemical Methods of Test Sectional Committee had been approved by the Textile Division Council.

0.2 This standard was first published in 1956 and has been revised to align it with ISO 105/N-1978 Textiles — Tests for colour fastness NO1 Colour fastness to bleaching : Hypochlorite, issued by the International Organization for Standardization (ISO). Further the sampling clause and the assessment of colour fastness has been modified similar to other latest Indian Standards on colour fastness tests.

0.3 Colour fastness of textile materials is of considerable importance to the consumer. The fastness depends not only upon the nature and depth of shade of the dyestuff used but also upon the nature of the fibre and the method of dyeing or printing employed; the same colouring matter, when used in dyeing or printing different fibres or when applied by different methods upon the same fibre, may give vastly different results. Formulation of standard methods of test for determining colour fastness of textile materials to different agencies and processes likely to effect change in colour is, therefore, necessary.

1. SCOPE

1.1 This standard prescribes a method for the determination of colour fastness of textile materials of all kinds and in all forms to the action of bleaching baths containing sodium or calcium hypochlorite in concentrations normally used in commercial bleaching.

1.1.1 The method is applicable principally, but not exclusively, to natural and regenerated cellulose textile materials.

2. PRINCIPLES

2.1 A specimen of the textile is agitated in a solution of sodium or calcium hypochlorite, rinsed in water, agitated in a hydrogen peroxide solution or sodium bisulphite solution, rinsed and dried. The change in colour is assessed with grey scale.

3. SAMPLING

3.1 Sample to determine conformity of a lot of coloured textile material to a specification shall be selected so as to be representative of the lot.

3.2 Sample drawn in compliance with the relevant material specification or as agreed to between the buyer and the seller to evaluate colour fastness of the material in the lot shall representative of the lot.

4. APPARATUS

4.1 Container — made of glass or glazed porcelain with provision for closing.

4.2 Grey Scale — for evaluating change in colour.

5. REAGENT

5.0 Quality of Reagents — Unless otherwise specified, pure chemicals shall be employed in tests and distilled water (*see* IS : 1070 - 1977*) shall be used where the use of water as a reagent is intended.

NOTE — Pure chemicals shall mean chemicals that do not contain impurities which affect the test results.

5.1 Sodium Hypochlorite (NaOCl) Solution — containing 2 g of available chlorine per litre, buffered at *p*H 11·0 ± 0·2 with 10 g of anhydrous sodium carbonate (Na_2CO_3) per litre at 27 ±2°C. To prepare this reagent, use sodium hypochlorite of the following composition:

Active chlorine	140 to 160 g/l
Sodium chloride (NaCl)	120 to 170 g/l
Sodium hydroxide (NaOH), *Max*	20 g/l

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*Specification for water for general laboratory use (*second revision*).

Sodium carbonate (Na_2CO_3), *Max*	20 g/l
Iron (Fe), *Max*	0·01 g/l

5.2 Hydrogen Peroxide Solution — containing 2·5 ml of hydrogen peroxide [30 percent (*m/m*) H_2O_2] per litre or sodium bisulphite ($NaHSO_3$) solution (5 g/l).

5.3 Soap Solution — containing 5 g of soap per litre (*see* **5.1** of IS : 3361 - 1979*) for wetting out water-repellent fabrics.

6. PREPARATION OF TEST SPECIMENS

6.1 If the textile to be tested is fabric, use a specimen 10 cm × 4 cm.

6.2 If the textile to be tested is yarn, knit or weave it into fabric and use a specimen 10 cm × 4 cm, or make a wick of parallel lengths 10 cm long and about 0·5 cm in diameter tied near both ends.

6.3 If the textile to be tested is loose fibre, comb and compress enough of it to form a sheet 10 cm×4 cm; in order to support the fibres, sew the sheet on a piece of cloth which will not affect the action of the hypochlorite on the specimen.

7. PROCEDURE

7.1 If the textile to be tested has a water-repellent finish, wet out the specimen thoroughly in the soap solution at 25 to 30°C. Drain the specimen of excess liquor so that it retains approximately its dry mass of wetting-out solution and immediately place the specimen in an open form in the sodium hypochlorite solution at 27 ± 2°C at a liquor ratio of 1 : 50.

7.2 If the textile to be tested has no water repellent finish, wet out the specimen, in distilled water at room temperature, remove the excess water and place the test specimen in an open form in the sodium hypochlorite solution at 27 ± 2°C at a liquor ratio of 1 : 50.

7.3 Close the container and keep the specimen in the solution at 27 ± 2°C for 60 min. Avoid exposure to direct sunlight.

7.4 Rinse the specimen thoroughly in cold running tap water and then stir it for 10 min in one of the solutions of H_2O_2 or sodium bisulphite at room temperature.

7.5 Rinse the specimen thoroughly in cold running tap water, remove the excess water and dry the specimen by hanging it in air in shade at a temperature not exceeding 60°C.

7.6 Evaluation — Assess the change in colour of the specimen with grey scale by the method presceribed in IS:768-1982*.

NOTE 1 — Treated test specimens and the pieces of adjacent farics should have cooled after drying and should have regained their normal moisture content before evaluation.

NOTE 2 — In cases of doubt in the colour fastness rating as assessed by an observer, the assessment should be done by at least three observers and the overall average rating should be reported.

8. REPORT

8.1 Report the numerical rating for change in colour of each specimen tested.

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*Method for determination of colour fastness of textile materials to washing : Test 2 (*first revision*).

*Method for evaluating change in colour (*first revision*).